## **ABSTRACT**

The present invention recognizes that marine organisms comprise nucleic

acid molecules that encode polypeptides that catalyze the synthesis of bioactive
compounds, such as polyketides including bryopyran rings, such as bryostatins.

One aspect of the present invention is a composition including at least one
nucleic acid molecule that encodes at least one polypeptide that catalyzes at least
one step in the synthesis of at least one polyketide such as a bryopyran ring,
wherein said at least one nucleic acid molecule is derived from at least one
marine organism. A second aspect of the present invention is a composition
including a library of nucleic acid molecules of the present invention. These
nucleic acid molecules can be used in a combinatorial biosynthesis of
polyketides, bryopyran rings and bryostatins.

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